

The Eastern Spinebill *Acanthorhynchus tenuirostris* as a nest-predator

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Abstract. Here we document the removal of eggs from the nests of two passerine species—Brown Thornbill *Acanthiza pusilla* and Yellow-faced Honeyeater *Caligavis chrysops*—by Eastern Spinebills *Acanthorhynchus tenuirostris*.

Introduction

Nest-predation has a significant impact on the breeding success of woodland passerines. Apart from some exceptional seasons, and perhaps in some unusual species, it accounts for ≥70% of nest losses in this group (Mathews *et al.* 1999; Colombelli-Negrel *et al.* 2009; Guppy *et al.* 2012). However, the identity of the predators is seldom known (Guppy *et al.* 2014).

Guppy *et al.* (2014) used remote cameras to identify seven species of nest-predators in a woodland community on the south coast of New South Wales, where the annual failure rate of nests over 4 years was 48–68% (mean 59%). In the present study, we used a functional definition of nest-predation, i.e. any activity that resulted in the failure of a nest was deemed a predation, and its perpetrator a nest-predator. The study site (35°52'S, 150°03'E) was a 10-ha area (~200 m × 500 m; 100 m above sea-level) of freehold land, 6 km north-west of Moruya, New South Wales. The site comprises a mixture of open woodland, dense thickets of Burrawang *Macrozamia communis*, Black She-oak *Allocasuarina littoralis* and Tick Bush *Kunzea ambigua*, and a dense stand of Swamp Paperbark *Melaleuca ericifolia*. We have continued using remote cameras here since the original study in the 2012–2013 breeding season (August–January inclusive), and in the 2014–2015 breeding season discovered a hitherto unknown nest-predator.

With the same cameras (HC500 Hyperfire Semi-Covert IR; Reconyx Inc., Wisconsin, USA), we documented three instances of an Eastern Spinebill *Acanthorhynchus tenuirostris* flicking eggs from nests. In some cases the individual Spinebill could be identified from colour bands ('positively identified', PI), but sometimes this was not possible ('not positively identified', NPI). Each nest had a camera at it before eggs were laid. All the dates below refer to the 2014–2015 breeding season. The Banding Licence number for MG was 2857.

Observations

Brown Thornbill nest 1

The first egg was laid in this nest on 7 September 2014; Brown Thornbills *Acanthiza pusilla* lay at 48-h intervals. On 11 September, one egg was outside the nest, and



Figure 1. An Eastern Spinebill flicking an egg out of Brown Thornbill nests: (a) Thornbill nest 1, 13 September 2014, 0755 h. The whitish egg is in the air, blurred, directly below the Spinebill's beak. (b) Thornbill nest 2, 21 September 2014, 1638 h. The egg (typical for a Brown Thornbill, with one brown end) is at the end of the Spinebill's beak, but was not held or pierced. Photos: M. & S. Guppy



Figure 2. An Eastern Spinebill flicking an egg out of a Yellow-faced Honeyeater nest, 9 November 2014, 1857 h (infra-red light, so black-and-white image). The blurred egg can be seen in the air. Photo: M. & S. Guppy

two eggs remained inside. There was no information on the camera as to how this occurred. On 12 September, two eggs were still in the nest, and a Thornbill was on the nest on 13 September. On 15 September, three eggs were outside the nest, and the camera revealed a Spinebill (NPI) flicking an egg out of the nest on 13 September (Figure 1a) and 15 September. No eggs were damaged and they remained where they lay for at least several days. A Spinebill (PI) with a nest 100 m away was photographed collecting nest-material at this Thornbill nest on 19 September. It was also seen taking feathers from another Thornbill nest that contained eggs (150 m from Thornbill nest 1, and 100 m from its own nest) on 6 October. This Spinebill nest was active until at least 12 October.

Brown Thornbill nest 2

The first egg was laid on 14 September. On 16 September, one egg was outside the nest, and one inside, but there was no information on the camera on how this occurred. On 18 September, a Spinebill (NPI) visited the nest briefly. On 19 September, there were two eggs in the nest and one outside. On 21 September, a Spinebill (NPI) was photographed flicking two eggs and some lining out of the nest (Figure 1b). As with the previous instance, none of the eggs was damaged and the eggs lay below the nest for at least a week.

Yellow-faced Honeyeater nest

The first Yellow-faced Honeyeater *Caligavis chrysops* egg was laid on 7 or 8 November and the nest contained two eggs on 9 November. A Spinebill (PI) closely inspected the nest at 1612 h on 9 November. At 1900 h on 9 November, a Spinebill (NPI) came to the nest and, after deliberate and elaborate positioning of the body, flicked out an egg (Figure 2). The egg was found broken beneath the nest; this nest was 2 m above the ground compared with ~0.3 m for the Brown Thornbill nests. The broken egg and its yolk remained, untouched, for several days.

Discussion

The identification of the Eastern Spinebill(s) involved is difficult as the leg containing the colour-band combinations was not always visible or clear. Partial identification was possible by sexing the bird (using the crown colour and beak length), and by identifying the colour of the master band (on the right leg above the metal band).

What we can say with certainty is that the Eastern Spinebill individual/s that took the eggs from the Brown Thornbill nests was/were female, and that the bird that first visited the nest of the Yellow-faced Honeyeater was a male. It is likely, based on a combination of crown colour, beak length, and colour-band identification on both legs, that:

1. The same female Spinebill flicked the eggs out of both Brown Thornbill nests, took building material from two Thornbill nests, and had an active nest in the vicinity.
2. A male Spinebill flicked at least one egg out of the nest of the Yellow-faced Honeyeater, after a different male Spinebill had been at that nest.

3. The individual Spinebill seen at the Brown Thornbill nests was not associated (as a pair) with the individuals seen at the nest of the Yellow-faced Honeyeater.

Higgins *et al.* (2001) made no mention of this behaviour, or of the Eastern Spinebill stealing nest-material from other nests. To the best of our knowledge, there is no previous documentation of egg-flicking behaviour by the Spinebill in the literature. At this site, we had cameras on all the Brown Thornbill nests and on at least 70% of Yellow-faced Honeyeater nests for the last three breeding seasons (including 2014–2015), but have not previously seen this egg-flicking behaviour. The stealing of nest-material is another matter: during the 2013–2014 and 2014–2015 breeding seasons, we documented a Spinebill taking material from four Brown Thornbill nests and one Rufous Whistler *Pachycephala rufiventris* nest. Only one of these nests (a Brown Thornbill nest; see above) contained eggs, none of which was removed.

The likely scenario is that both a male and a female Eastern Spinebill flicked eggs out of the nests, and that these birds represented two different breeding pairs, so the behaviour is not the result of one unusual bird, or even one unusual pair. The advantage of this behaviour is difficult to explain. The Spinebill may be discouraging competition in its territory, but our long-term observations suggest that competition for nesting sites or food between the Spinebill and the Brown Thornbill would not appear to exist. In any case, nesting material could be taken from a Thornbill nest without flicking the eggs from the nest. The case of the Yellow-faced Honeyeater is perhaps easier to interpret as there is some overlap, at certain times of the year, of the food items of the two species (mainly nectar) at this site. Further observations on this behaviour might provide some insights into its biological significance.

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